

4B: Urban Influences on Water Quality: Elliott Bay/Duwamish Estuary Monitoring and Assessment

Questions & Answers

Q: Kevin, I was a bit surprised that some of the metals data in Elliott Bay didn't have much of a tidal component to it, although the chromium values looked like they had some variability and I wondered if that was at all tidal – as that interface between the fresh and salt water works its way back and forth. They were relatively constant except the chromium did look like it was a little bit variable. Is that possibly tidal?

A: I haven't done any sort of spectral analysis on that to determine if there is a tidal component. We did regress the data against flow in the Green River. I think we also regressed it against rainfall events. I don't think I regressed it against any tidal components, but if you plot up the cadmium, there really isn't that much variance. We didn't do chromium.

Q: There was one slide that , the very beginning, kind of showed a variation.

A: The arsenic and the cadmium were kind of the same. There wasn't much variance in the data itself to indicate that there was some sort of tidal component in that, but I did not do a regression to check that specifically.

Q: In the PSAMP database, there's a reasonably high level of mercury in the sediments in Sinclair Inlet over near Bremerton. They attribute a lot of that mercury, or mercury inputs presently, in the wastewater treatment plant flow from Bremerton and Kitsap number five. And that's sort of, I guess, attributed to switches or some mercury-based products that somehow end up in the wastewater stream and that was a bit surprising to me and I just wondered if anyone could comment on what mercury values in the discharge either from the wastewater treatments plants or from the CSO's might be and in light of Curt's discussion on prop wash, what other possible explanations there might be for the high mercury values in the PSAMP database.

A: The average is about 54 nanograms per liter, but that's based on two samples. We had to use ultra clean sampling methods before we could even measure it in the CSO's, so you had one that was maybe about 30 and then another one that's 65, or something like that. It averaged out to around 54 nanograms per liter. That was one CSO.

Q: Chuck Boatman, Aura Nova Consultants. I think this is for Kevin. You mentioned that the partitioning coefficients for the metals were constant throughout the estuary in the model, but they were based on field data. Can you explain how you derived those?

A: Yes we used total and dissolved and then total suspended solid concentrations. A fairly simple calculation to get back at the partitioning coefficient. There was no extensive laboratory analysis where you actually measure the amount of chemical that was absorbed to the suspended solids.

Q: And a related question. The calibrations for metals you showed, I assume those were all, was that total metals or suspended solids?

A: That was total.

Q: Did you do calibration for the dissolved metals?

A: No, we did not.

Q: Hi, Roseanne Lorenzana with EPA here in Region 10. I have a question for almost all the speakers. I don't know how much time we have, so stop me when we need to go. For Kevin, I had a question about the model. You described a decay component and on your slide it just said lumped. And I wasn't quite sure what you meant by that. Is this decay component just for transport or is it for biotic as well as abiotic decay?

A: It includes everything from proteolysis to hydrolysis, whatever sort of decay component that you can have for any particular constituent.

Q: And what does "lumped" mean?

A: These many processes are going on and basically you lump all those decay processes into one value.

Q: In your simulation, that was really nice computer simulation and I've never seen anything like that before, so I'm not sure what I was seeing. Was there an upstream flow component to that?

A: Yes there was. There was a freshwater flow input from the Green River coming into that, and that's what caused most of that surface layer to go downstream at a more rapid rate.

Q: But there was always an upstream, I mean it went backwards.

A: Well that was tidal forcing. You actually get reverse flow conditions.

Q: Can that information be used to verify that some of the reference sites that John talked about are not impacted by the CSO's?

A: Well, we are using the mussel data within the model calibration as well. So the model simulates transport within the system.

Q: Randy, on the semi-permeable membrane device for organics, was that measuring total or dissolved or both?

A: I'd say it's a combination of both because if you have a particle actually hitting the device there'll be some partitioning going on.

Q: Are you able to distinguish total from dissolved?

A: No. If you really want more detail on that, I would talk to Eric Crecelius about that. We should get out of here pretty soon.

Q: Curtis, your drift study shows what's happening on the surface at Denny Way. What is happening at the bottom on Denny Way, and what would happen after regime shift?

A: The drift cards probably reflect down to ten meters depth. I don't know where the Denny Way outfall is going to be built, so I don't know how deep it's going to be. The regime shift, we think, should occur in the next few years, and we don't know what the circulation will be in Elliott Bay. It might be quite different, so unfortunately regimes last 20 years, about the length of most of our careers. So another generation might come up and do the next one, so stay tuned for 20 years.

